

Remarks

Claims 1-43 are pending in the application. Claims 23-43 have been allowed. Claim 1 has been rejected under 35 U.S.C. § 102, and claims 2-22 have been rejected under 35 U.S.C. § 103. In view of the following remarks, reconsideration and withdrawal of these grounds of rejection is requested.

Examiner Interview

The Applicant thanks the Examiner for the courtesy of the Interview conducted on May 22, 2003. During the Interview, the Examiner and Applicant's representative discussed the pending rejections under Buffet et al. and Kosugi. Applicant's representative agreed to file a formal response memorializing the arguments made during the Interview. Accordingly, this Response was filed.

§ 102 Rejections

Claim 1 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Buffet et al. (U.S. Pat. No. 6,477,057). For the reasons set forth below, reconsideration and withdrawal of this ground of rejection is respectfully requested.

The present invention comprises, in one exemplary embodiment, a microwave/millimeter wave circuit 110 (See Figs. 1a and 1b). The circuit includes a first metallization layer 112a, a second metallization layer 112b, and a dielectric layer 117 sandwiched therebetween. The circuit also includes at least one conductive via 119 extending from the first metallization layer 112a to the second metallization layer 112b, through the dielectric 117.

Buffet teaches a high frequency decoupling circuit for use in computer systems. The decoupling circuit includes a first layer 201 coupled to a voltage source VDD, a second layer 205 coupled to ground potential (GND), and a signal layer 203 disposed between the first and second layers. The decoupling circuit includes capacitors 213, 215 for coupling high frequency (e.g., AC) signals on signal layer 203 directly to ground so that such signals do not interfere with the DC logic signals (e.g., VDD, GND).

It will be noted that the decoupling circuit described by Buffet is intended to operate at low frequencies only (emphasis added) (see col. 3, line 52 – col. 4, line 9). All high frequency (e.g., AC) signals coupled to the decoupling circuit described by Buffet are shorted to ground

(i.e., the AC signals are 'decoupled' from the DC signals) (see col. 3, lines 56-58). In fact, the entire purpose behind Buffet's invention is to isolate high frequency (e.g., AC) signals from low frequency (e.g., DC) signals (see Abstract).

Claim 1 recites:

A multilayer microwave or mm-wave circuit comprising: a first metallization layer, at least a portion of said first metallization layer adapted for operation at a frequency ranging from 20GHz to 100 GHz; a second metallization layer, at least a portion of said second metallization layer adapted for operation as a ground plane; a dielectric substrate layer, said dielectric substrate layer disposed between said first and second metallization layers; and a plurality of conductive vias extending through said dielectric substrate layer and electrically connecting portions of said first and second metallization layers, said multilayer microwave or mm-wave circuit being a flexible circuit. [emphasis added].

Thus, claim 1 requires a "flexible" circuit including a "first metallization layer" operable at "a frequency ranging from 20GHz to 100 GHz", and a "dielectric substrate layer" with "vias" extending therethrough. As discussed below, Buffet fails to disclose or suggest such an invention.

The circuit described by Buffet operates to couple all high frequency signals to ground, and thus cannot 'operate' in the high frequency range recited in claim 1 (i.e., 20GHz to 100 GHz). Additionally, Buffet does not disclose or suggest a "dielectric" layer disposed between two metallization layers with vias extending therethrough. The only dielectrics arguably described in Buffet are the dielectrics within the decoupling capacitors 213, 215, and these dielectrics most certainly do not include vias extending therethrough. Finally, Buffet nowhere discloses or suggests that his decoupling circuit is "flexible." Accordingly, reconsideration and withdrawal of this ground of rejection with respect to claim 1 is respectfully requested.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Kosugi (U.S. Pat. No. 5,500,556). For the reasons set forth below, reconsideration and withdrawal of this ground of rejection is respectfully requested.

Kosugi teaches a microwave package structure including a flexible mother substrate 10 and a semiconductor element 4 enclosed within a circuit module 1. The mother substrate 10 is comprised of a center conductor layer 11_m sandwiched between grounding layers 12_{m1}, 12_{m2}.

The mother substrate 10 includes conductor vias 5, 6 extending both partially, and completely, therethrough. The conductor vias 5 connect the center conductor layer 11_m to the conductor layer within the circuit module 1, and the conductor vias 6 connect the grounding layers 12_{m1}, 12_{m2} to the grounding layers within the circuit module. The conductor vias 5,6 do not couple the conductor layer 11_m to the grounding layers 12_{m1}, 12_{m2} (emphasis added).

Kosugi fails to disclose or suggest a “dielectric substrate layer” disposed between first and second metallization layers and having a “plurality of conductive vias” extending therethrough and “electrically connecting” portions of the first and second metallization layers, as recited in claim 1. First of all, the term “dielectric” has a well-established meaning in the art. The Penguin Dictionary of Electronics, Second Edition (1988) defines “dielectric” as “a solid, liquid, or gaseous material that can sustain an electric field and act as an insulator.” The conductor layer 11_m sandwiched between the grounding layers 12_{m1}, 12_{m2} is most certainly not a “dielectric” because it is a ‘conductor’ of electrical energy, not an insulator. Further, Kosugi discloses no other dielectric layers. Additionally, the conductor vias 5, 6 disclosed by Kosugi do not ‘electrically connect’ portions of the conductor layer 11_m to portions of the grounding layers 12_{m1}, 12_{m2}. As explained above, the conductor vias 5, 6 couple the signals on conductor layer 11_m, and grounding layers 12_{m1}, 12_{m2}, to similar layers within the circuit module 1. Therefore, reconsideration and withdrawal of this ground of rejection with respect to claim 1 is respectfully requested.

§ 103 Rejections

Claims 2-22 stand rejected under 35 U.S.C. § 103(a) as being obvious over Kosugi. For the reasons set forth below, reconsideration and withdrawal of this ground of rejection is respectfully requested.

As noted above, Kosugi fails to disclose or suggest a “dielectric substrate layer” disposed between first and second metallization layers and having a “plurality of conductive vias” extending therethrough and “electrically connecting” portions of the first and second metallization layers, as recited in claim 1. Since claims 2-22 are all dependent upon claim 1, and Kosugi fails to meet the limitations of claim 1 as discussed above, reconsideration and withdrawal of this ground of rejection with respect to claims 2-22 is requested.

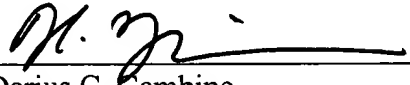
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Summary

In view of the foregoing remarks and amendments, Applicants submit that this application is in condition for allowance at an early date, which action is earnestly solicited.

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Date

Respectfully submitted,



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